The Real Dirt

THE GARDEN CLUB of AMERICA

Fall 2016
Issue #41

Table of Contents

Editor: Catherine Allan
Assistant Editor: Jenny Wyatt

Cover Photo:
Children's Garden
Brooklyn Botanic Garden

The Garden Club of America Horticulture Committee does not endorse any of the products, resources or sources mentioned in this newsletter. We offer simple recommendations based on the experiences of individual writers.

Message from the Chairman

Barbara Tuffli
Chairman

On this 15th Anniversary of the GCA Shirley Meneice Horticulture Conference, we dedicate this 2016 Fall Issue of The Real Dirt to our treasured friend and mentor, Shirley Meneice.

A hands-on gardener, horticulturist, and former chairman of this committee, Shirley's endless curiosity, ongoing quest for horticultural knowledge, patience, quick wit, and perspective inspire all who know her. Although Shirley was not with us in September, the only conference she has ever missed, she was definitely with us in spirit.

Congratulations to Donna Ganson and her committee for their outstanding lineup of lectures, workshops and tours, which comprised the 2016 Conference held in September at the Brooklyn Botanic Garden. This Fall Issue of *The Real Dirt* traditionally focuses on the conference and carries write-ups on sessions to share with readers across the country, the wealth of information presented. Many thanks to each of the writers who have contributed to this Fall 2016 Issue of *The Real Dirt.* We hope you enjoy reading it.

Centennial Tree Project Updates

In honor of The Garden Club of America's Centennial in 2013, each of our 200 clubs created a project involving trees, whether it was studying them, propagating them or planting them. Many thanks to the clubs that have already updated us on their projects! Your overwhelming response has inspired us to produce a special April 2017 issue of *The Real Dirt,* incorporating the information you continue to provide. Some have sent pictures of trees that have grown, some clubs have planted more trees, some projects have inspired further collaboration within the community and some failures have inspired further efforts. We continue to welcome any updates you wish to share, however large or small. All of the original projects are listed by GCA Zone in the right side bar of the Horticulture Committee landing page https://www.gcamerica.org/members/committees-hort

A life-size cut out of Shirley given at her 93rd b-day from her Club

Camellia japonica 'Shirley Meneice'

Message from the Editors

Catherine Allan
Editor

Jenny Wyatt
Assistant Editor

There's nothing more satisfying in feeding the hunger for horticulture than attending a Shirley Meneice Horticulture Conference. The Brooklyn Botanic Garden outdid itself in offerings to feed over two hundred horticulturists this past September. It was pure enjoyment. Having hosted the 2015 conference in Seattle, we know the intricate details involved. This year's Shirley Meneice Horticulture Conference unfolded seamlessly. Jenny and I know first hand about the hard work in planning and executing such a colossal event. Our horticulture hats are off to Donna Ganson and the five New York area GCA Garden Clubs whose diligence was realized at this recent conference.

The BBG, as it is fondly known, and Director Scot Medbury rolled out the red carpet for our visit, providing us with knowledgeable staff to discuss the variety of work ongoing, i.e., outreach programs to educate the children in the community, growing a greener garden, and Japanese pruning, as well as understanding the Big Trees in the garden. We could have stayed another week to absorb all the educational programs offered at the BBG. Prospect Park, an Olmsted design located next to the BBG, was another highlight on the itinerary. We spent a morning with its knowledgeable staff to understand the ever-growing need to preserve our urban green spaces, especially in the 4th most densely populated city in the U. S.! Thank you to all who made this conference such a success!

We decided that the overwhelming response to the ongoing updates for the Centennial Tree Projects deserved its own special issue. It will arrive in early April. If your club hasn't submitted a report with recent photos, there is still time to send us your update until January 15, 2017.

This issue concludes our tribute to the 2016 Centennial Celebration of our country's National Parks. Now that the crowds are gone, it might be an optimal time to visit. Special thanks to two former editors, Diana Fish and Kathie VanDevere who generously contributed to this issue endorsing our publication. Last, but not least is the book review. It's not too late to plant bulbs. Be inspired!

Respectfully,
Catherine Allan, Editor
Jenny Wyatt, Assistant Editor


Shirley
Meneice

GCA Shirley Meneice National Horticulture Conference 2016

by Donna Ganson

The Brooklyn Botanic Garden was host to this year's Shirley Meneice Horticulture Conference, September 20-22. It is named after an extraordinary horticulturist, Shirley Meneice of the Carmel-by-the-Sea Garden Club. It first began in 2002 at the Huntington Gardens in Pasadena, CA., to honor Shirley Meneice. This annual horticulture conference takes place in the fall and rotates throughout the country in major arboretums and botanical gardens. Horticultural workshops, tours and renowned speakers dominate the conference. Invitations to the conference for clubs to send two delegates will be emailed in the spring. The conference has become very popular and fills quickly, often within a few days. Watch for the details in the spring of 2017. Plan ahead to have delegates register soon after the invitation is sent in order to reserve a spot in this coveted conference.

Linda Grieve is the 2017 Shirley Meneice Horticulture Conference Chair in Omaha, Nebraska. Be watching for details to be sent in the spring of 2017.

Introduction of Shirley Meneice

Introduction by Luise Strauss at the Shirley Meneice Horticulture Conference, September 21, 2016, the Brooklyn Botanic Garden, Brooklyn, New York

Barbara Tuffli asked that I introduce the eponymous Shirley Meneice and her legacy at the 2016 Shirley Meneice Horticulture Conference. Unfortunately, Shirley was unable to attend.

Stubborn, funny, an enthusiastic traveler with an insatiable curiosity about the world, Shirley was surprised, but I hope, pleased, when the Horticulture Committee inaugurated and named the conference for her. She had been a tireless supporter of the Plant Exchange which was the heart of the work of the Horticulture Committee. For thirty+ years involving all the zones and their clubs in studying and propagating plants, that project taught everything from nomenclature, plant families, growing habits and, in most cases, a love of Horticulture. Shirley was right there.

When it became obvious the plant exchange was not to survive, the idea of a conference for club horticulture chairs arose. Shirley was immediately behind it. Now, 15 years later and still going strong, the Shirley Meneice Horticulture Conference is a testament to that fortitude. This is the first one she's missed and she wanted me to tell you all how disappointed she is not to be here.

She is a treasured mentor, who still scratches in the dirt when she can.
What is a legacy? It's planting seeds in a garden you may never get to see.

Awards

Alice Thomas
Vice Chair Awards

Autumn is the time for Awards! Who in you club or community needs a thank you nod? There are many, so how do we choose? Let us start with a few suggestions:

- An enthusiastic member who enters horticulture in shows and attends workshops.
- The workshop leaders who promote horticulture, propagation, and plant grooming.
- Mentors who help others succeed
- Your community leadership that share their gardens, organization, or expertise with the club
- Your Partners for Plants chairman or past chairman
- The Horticulture Chairman or past Chairman
- Your member who chairs your community projects

Your Zone Award?

- Outstanding members that serve within the zone.
- Participate in zone flower shows as an entrant or a leader.
- Your zone representative who demonstrates leadership and involvement in service to the community and within the zone, organizing workshops and plant or seed exchange.
- A community organization that serves the community with the club's involvement

These are only a few suggestions! A Club Horticulture Award should be nominated two months prior to the presentation date. The Zone Award nomination should be submitted three months before the presentation date. If you have an idea, please contact me or your Zone Awards Representative. Pass the word to your President or Awards Chair. It is a simple way to say thank you!

Freeman Medal

Lucy Rhame
Vice Chair
Freeman Medal

This coming year of 2017, an odd year, a woody shrub or tree will be awarded the Freeman Medal. A perennial or an herbaceous plant is awarded the medal on even years. The medal is given to an underutilized native plant in cultivation that is noteworthy of preservation or promotion. It must be native to North America. The plant should have attributes that enhance the landscape, are attractive and are effective as environmental plants, i.e., controls erosion or is necessary for wildlife.

Nomination Procedure: may be made by a GCA club member. Nominations may be accepted from an individual or an organization outside of the GCA with endorsement by a GCA club. Nomination forms are available to applicants on the Horticulture Committee webpage, under the Freeman Medal section. All applications are submitted electronically. Please note that the Freeman Medal nomination form cannot be saved once the nominator begins filling in the application. It is advised that the applicant has all the information ready to enter before submitting the form. Three to five high-resolution digital photos are needed and should be sent to: freemanmedal@gcamerica.org. Color images should include the following: one image of the habit of the mature plant and three to four close-up pictures of its outstanding features, i.e., bloom, bark, foliage or any special feature and/or seasonal change. A release for copying an image must be included if submitting a copyrighted image. Please check with the Vice Chair, Lucy Rhame at lrhame@aol.com before submitting the nomination.

Partners for Plants

Sharon Blackburn
Vice Chair
Partners for Plants

Partners for Plants Exhibit at the Shirley Meneice Conference

Inform and inspire! Informing members about the Horticulture Initiatives and inspiring them to want to participate is the reason for table exhibits at our GCA meetings, including the Shirley Meneice Horticulture Conference. The Partners for Plants exhibit displayed posters that provided information about what a P4P Project is, and another that showed the location of P4P Projects located in National Parks to honor the Centennial celebration of the National Park Service. The heart of P4P is a work project by GCA club members. It is inspiring to see photos of members laughing, sweating, and sharing while working with plants in beautiful public places from shorelines to mountains to forests to prairies. If your project sent photos, one of them was on the poster at SMHC. Since we have 45 projects, it was a quite a puzzle getting the photos to fit, hence the caption read, “Is your Partners for Plants project the missing piece? “

The hope was to inform and inspire clubs that are thinking about starting a new Partners for Plants project.

Sharon Blackburn
Horticulture Vice Chairman Partners for Plants
P4P@gcamerica.org

Propagation and Seed Share

Katherine Shepperly
Vice Chair
Propagation &
Seed Share

Propagation and Seed Share - Sow it, Grow it, Share it, Show it!

Propagation and Seed Share(P&SS) is a rapidly growing Horticulture Committee initiative that supports club propagation efforts. It is educational and enables members of GCA clubs to share seeds with other members across the country and to share their propagation stories. Everyone can participate, and we hope that every club will! That was the thrust of our seed share activity at the recent Shirley Meneice Horticulture Conference at the Brooklyn Botanic Garden. Take a close look at the Horticulture Committee webpage under Propagation and Seed Share. There is a video that provides an overview of the program. Enjoy reading P&SS stories from clubs from all twelve zones. New ideas are there for club programs; browse our P&SS resources and read growing tips for seeds. Learn how to start a seed library in your community and order the Basic Plant Propagation handbooks. Seed Sharing at the Shirley Meneice Horticulture Conferences, the Annual Meetings, club and zone activities and through online Seed Sharing are available on this webpage. Send a P&SS story for everyone to read. It can be as simple as one sentence with a picture or more detailed with a paragraph and multiple photos. It is *your* story, told *your* way and the online P&SS form for your story is easy to fill out. Who knows? It may inspire others to do the same? If you have any questions or concerns, please feel free to contact your Zone Horticulture Rep. or me, Kathy Shepperly, Vice Chairman of Propagation and Seed Share: seedshare@gcamerica.org

Shirley Meneice Horticulture Conference 2016 Breakout Sessions

BBG Trees

The first tree we looked at was the *Cladastrus* or Yellowwood. The tree is in the pea family and is native to the area. Arborists Chris Roddick and Alec Baxt explained that the beautiful old tree flowers more heavily in some years and less in others. These flowering cycles help the tree conserve energy. As for caring for all the trees, they look at where a particular tree came from, i.e., its native ecosystem and what its needs are, taking into account that the trees in the Garden are not in the forest. Public safety is also an ongoing concern. (If a large limb is overhanging the walking path and becomes weak, it probably needs to go.) The label on each tree indicates the year it was planted and the tree's number for that year. This particularly beautiful old tree was planted in 1916 and it was the 10th specimen planted that year as indicated by the label that reads 160010. They want their trees to "make a profit," meaning to have as much foliage as possible. They remove limbs usually for aesthetics and safety.

Interestingly, some trees have sun leaves and shade leaves. Leaves stop photosynthesizing at about 90 degrees, so the interior leaves may continue to do their work while the outer leaves will stop. Also of interest, some trees downsize with age.

The *Malus,* or crabapple, shown in the top left picture is regenerating into a new tree. To manage the tree, they have had to remove dying limbs. A fungus in the cavity is slowly killing the tree. The one fallen limb that is left has rooted and is forming a new tree. Since the original tree was planted in 1911, Alec posed the question, is the new tree that is now growing old, or is it young?

We looked at a *Platanus orientalis* f. *digitata*. or Cut-leaf Oriental Planetree. This tree has beautiful bark that it sheds in the summer. This shedding exposes the cortex in the stem. The cortex has chlorophyll in it, so the tree can photosynthesize through its stem/bark.

The *Pterocarya fraxinfolia*, or Caucasian Wingnut, was a particularly spectacular tree with very large overhanging branches and a rugged, beautiful trunk. They prune these limbs from the tip back. They say they wear two hats in their tree maintenance program. First, they look at the biological health (the vigor of the tree), and second, they are engineers. They must consider whether or not the tree is safe covering the walking path. A branch is a separate entity, a tree growing out of a tree. So, it needs a strong, dynamic connection for structural health.

Submitted by Molly Adams
Zone IX Horticulture Representative

Change in the Garden: A Talk by Paige Dickey

How do you say good-bye to a garden you've created, developed and tended for over three decades? Writer, lecturer and garden designer Paige Dickey generously showed the way in her talk on "Change in the Garden" at the 2016 Shirley Meneice Horticulture Conference.

Dickey moved into her old farmhouse in North Salem, NY, in 1981, giving it the name "Duck Hill." Out of the sandy soil and fields adjacent to the house, she carved formal box gardens and gravel paths on axis with the home's entrances. The concept of "low maintenance" appears to have been non-existent for this avid gardener. Clematis vines, such as the lovely violet *Clematis triternata* 'Rubromarginata' raced through roses and hedges. Plantings consisted of intricately curated combinations such as the alluring light yellow *Paeonia mlokosewitschii* (dubbed "Molly the Witch) enveloped in the glowing chartreuse bracts of *Smyrnium perfoliatum* (Perfoliate Alexanders).

And then, there were the mistakes. Never again would she plant a privit hedge—too much upkeep, even for the dedicated. Yew hedges proved to be a perfect meal for deer. And barberry, planted as a hedge for her herb garden, revealed itself as invasive and in need of a weekly clip. Instead, Dickey recommends *Syringia meyeri* 'Palibin' (Dwarf Korean Lilac), *Cornus mas* (Cornelian Cherry) and, of course, species of *Buxus* (Boxwood) as hedges.

An engaging and eloquent writer, Dickey has chronicled her experiences at Duck Hill in *Duck Hill Journal: A Year in a Country Garden* (Houghton Mifflin, 1991) and *Embroidered Garden: Revisiting the Garden* (Farrar, Straus and Giroux, 2011), wherein she relates her experience of sharing a garden with a husband.

How, then, do you uproot yourself from a place deeply reflective of your life experiences and sensibilities? You cry for weeks, explained Dickey, and then you set your sights on the next adventure. Deciding to simplify and escape the high taxes of Westchester County, Dickey and her husband found "Church House," a spare, boxy structure built in the 1790's as a church meetinghouse in Falls Village, Connecticut. On the plus side, the house was sited on 17 acres of fields and woodlands with old trees and views of the Berkshire hills.

Friends exclaimed to Dickey that they couldn't wait to see her transformation of this bare landscape canvas and the garden treasures she would cultivate. Not this time, Dickey stressed. Some plants she won't live without— species roses and an apple orchard to name two. Instead, she is enjoying the wildness, more content to find delight in nature's garden.

A co-founder of the Garden Conservancy's Open Days program, Dickey has recently edited the beautiful volume *Outstanding American Gardens: A Celebration—25 Years of the Garden Conservancy* (Stewart, Tabori and Chang, 2015).

Submitted by Jenny Wyatt,
Assistant Vice Chair, *The Real Dirt*

Japanese Pruning

Designed by Takeo Shiota and opened to the public in June 1915, the Brooklyn Botanical Garden's Japanese Hill and Pond Garden was the first Japanese garden to be created in an American public garden. Extensively renovated in 1999 and 2000, the garden is designed to allow the visitor to reconnect with nature through harmonious asymmetry, including dome-shaped trees in the foreground to complement the hills and specimen trees. Evergreen plants, especially pines, which symbolize permanence, predominate, creating a garden that is designed to look good in all the four seasons. Brightly colored flowering plants are used in restraint and no annuals are used. Continuous attention to pruning and shaping trees is demanded to ensure that the garden mirrors nature and the landscapes of Japan's rocky coastlines and mountains. Trees, water, plants and structures create a greater scale in the garden.

Curator Brain Funk crafts a balance between the man-made structures in the garden and nature. The major pruning of the trees occurs in the winter. Pines are topped every year or two to reduce size and redirect growth. Lower branches are encouraged to grow downward; middle branches are pruned under the limbs eliminating all branches growing below the chosen limb. Crossing branches are removed, as are any branches that do not appear uniform within the tree's design. Pruning is undertaken every year or two to control the height and shape of the tree's growth. Candling is performed in the spring and needle plucking, the removal of needles on the underside of a branch, is preformed in the fall.

The Japanese maples are pruned to eliminate crossing branches. In addition, to either a reduction cut (a minor cut at the end of a branch to decrease the size of the tree) or a thinning cut in the springtime to create space within the interior of the plant. Thinning is most effectively preformed from underneath the tree in order to see the branching structure.

Whatever tree you choose to trim, know the history of your tree. Is it under stress from lack of water or disease? Do not over cut if your tree is stressed. Your trees, like you, need to be handled gently.

Submitted by Lucy Rhame
Vice Chair, Freeman Medal

Ramblers vs. Climbers

We met with Will Wallace, curator of the Cranford Rose Garden at the BBG. His goal with this garden is to grow roses using organic methods and disease-resistant varieties. He defined for us the real difference between ramblers vs. climbers. Will loves to leave the rose hips for color and texture. He doesn't prune his roses after the first of September and complements his roses with blue annuals if necessary. Will feeds his plants with Rose-tone.

Ramblers tend to bloom only once a season. After they bloom you can cut them back hard or leave the new canes for next season. The older the cane, the less prolific it is. Will bundles the newer canes into the old with jute twine and lays them along a fence or arbor. He will prune the dead flowering shoots but not too close to the canes.

Climbers will bloom once in June and maybe again in August. A fan trellis is needed for the climbers to train them to grow horizontally upwards. You will have more blooms across the cane rather than just on top. Trim them in late winter and train the new shoots in the direction of the old canes.

Submitted by Liz Lavezzorio
Zone XI Horticulture Representative

Convex and Concave: Green Infrastructure and the Movement of Water through BBG's Visitor Center Gardens

'Convex and Concave' describes the pleasing shapes of Brooklyn Botanical Garden's new LEEDS Gold certified visitor's center. But beyond the beauty, its design elements recycle all rain water and minimize reliance on the electric grid.

Rain is captured and diverted to the center's rain gardens, where plants limit soil erosion and provide filtration. From there the water goes through drains and to the Japanese Hill and Pond Gardens. A centerpiece of this water retention system is the quarter acre green roof. At the base lies an impermeable layer, then a capillary mat with drip irrigation center, followed by a few inches of growing medium. Next come the plants, spring bulbs and mixed native plants…and the occasional raccoon! Again all runoff is captured. Thus reliance on outside water is reduced by approximately 20 million gallons, plus rain that otherwise would go into sewers and streets is put to good use.

Energy savings are featured, too. Geothermal heating and cooling systems exchange heat with the earth using an underground network of piping connected to 28 wells. Greater insulation comes from the green roof, but in addition, the buildings are built into the side of a hill.

Other elements of sustainable design were used, such as recycling wood from Ginko trees taken down at the site for the exterior wood siding. The windows have a patterned glaze to deflect sunlight -- and also to stop birds from flying into them.

Beauty and function - this is a sustainable design at its best!

Submitted by Alice St. Claire-Long
Zone IV Horticulture Representative

Seed Saving for Urban Gardeners presented by Maureen O'Brien, BBG manager at GreenBridge

My favorite class at the 2016 Shirley Meneice Horticulture Conference at the Brooklyn Botanic Garden was given by Maureen O'Brien, community field manager at GreenBridge, the BBG's community environmental horticulture program. Maureen was a dynamic teacher, fitting a wealth of knowledge into an hour long class. Her recommendations for the best way to propagate were either by seed or by cutting. She highly recommended reading "Making More Plants," by Ken Druse (reviewed in the 2016 summer issue of *The Real Dirt)*.

Why do people save seeds? Here are some reasons: success, economics, bio-diversity, sentimentality, history, family, control and the challenge. The more years one has success in growing seeds, the better the plant. The soil improves from one year to the next too, increasing better results.

Here are some ways that seeds are pollinated:

1) Cross pollination (with a Q-tip)
2) Insect/bird/mammal pollination (birds, bees, bats, etc.)
3) Wind or water pollination (wind, storms, rain, etc.)

We spent time focusing on about ten vegetables that Maureen had brought. The main focus was on saving the tomato seed. It is important to have a viable seed and best to try with heirloom tomatoes. Tomato seeds need to be fermented. Take the seed, remove the gel cap that surrounds it and put it in water in a jar for about a week. After that, coffee filters come into play. Write the date of the project and name of the contents on the side of the filter. Drain the water from the jar and dump the clean seeds into the filter. Store in a cool, dark place, a drawer or cupboard and next spring give it a whirl.

Two-thirds of all the agricultural seeds in the world come from three companies: Montsano, Dupont and Syngenta.

Google seed sources and many names will appear. Trying to plant more pollinators for our garden club projects? Why not try growing pollinator plants from seed? It is a very rewarding experience when it works and they become plants for your garden too.

Submitted by Ellen Goodwin,
GCA Horticulture Committee Zone V Representative

Tool Maintenance Workshop

by Michael Mauro

Things you need to have on hand when you are cleaning and sharpening your tools:

Scotch-Brite Maroon scouring pads, steel wool pads; WD 40 or Liquid Wrench; #20 gauge sandpaper, flat file, small round files, clamps or vise, linseed oil, rags

Autumn is the perfect time to clean, sharpen and store your tools for the winter months. When cleaning and sharpening pruners and small, more delicate metal tools do not use steel wool. Rather, use the maroon-colored Scotch-Brite scouring pads. Spray the tool with either WD40 or Liquid Wrench to clean off rust and lubricate the mechanism. If there is an abundance of rust, leave the WD40 on for some time to allow it to work, then scrub with the Scotch-Brite. Next, sharpen the blade with a small round file at a 20-degree angle, file on the bevel side. Always sharpen away from yourself.

To maintain larger tools (shovels, hoes, cultivators, hedge sheers, etc.) spray a solid dose of WD40 or the Liquid Wrench on the metal part of the tool. Let it soak in, and scrub with the steel wool to remove the rust. This will also lubricate the tool. When you are satisfied, use a flat file to file on the flat edge to file out the nicks along the edge. This side of the tool remains flat, so you may need to use a vise or clamps to keep a steady grip on the tool while you are working with the file. Then on the reverse side, that has a beveled edge, use the flat file and sharpen along that edge at the 20-degree angle. It is easier to work the file in a downward motion.

For maintaining the wooden handles of any of your tools, soak a rag with linseed oil and rub

into the wood. This will keep the wood supple, not allowing it dry out and crack. To store tools, it is best to hang them. Temperature swings damage the tools if you keep them on the cold hard ground. These helpful tips will surely help keep your tools working for you longer. Happy tools, happy gardener!

Submitted by Kathy Shepperly
Vice Chair Propagation & Seed Share

Bonsai

Bon= pot or tray Sai = planting or planted

Julian Velasco, curator of the Starr Bonsai Museum for the BBG for the past ten years, shared his enthusiasm for bonsai, a fascinating class that inspired some to try bonsai. Bonsai is not about restricting growth but using natural techniques to miniaturize growth. First, it takes time and care. Depending on your potting soil, Bonsai need to be watered up to four times a day. Pruning and wiring is for the patient, precise Gardner. It takes strong hands to bend the copper wire. He encouraged us to go to a nursery and look for a small tree with an interesting trunk. Easier trees to work with for a newbie are *Ficus* or possibly the Chinese elm tree. The trunk is the "sole of the tree". The branches are the highlight and they help emphasize the tree. The foliage provides movement and again accentuates the tree. Here you must develop the tree by growing long branches then pruning to provide strength and thickness. Pruning is more about redistributing growth so it is harmonious and balanced. You must work with the tree visually and horticulturally. Prune what is actively growing as well as cut or remove some older leaves.

Submitted by Liz Lavezzorio
Zone XI Horticulture Representative

Taking the Garden to School
Project Green Reach

This breakout session was led by Sara Epstein and Dana Bourne, coordinators of the Brooklyn Botanic Gardens Project Green Reach. They conducted an informative and educational session held in the Education Greenhouse. This project was the winner of the Founders Fund Award in 1998 from Garden Club of America.

Project Green Reach is included in all Title 1 Schools, K-8th grades in Brooklyn, providing them with a curriculum package and inquiry based instruction in the classroom of each school.The teachers select a project for their classes. Options include bulbs in the fall, flower seeds and fruits in the spring, kitchen botany, desert environments and tropical rainforests.

Each teacher comes to the Brooklyn Botanic Garden for training with Sara or Dana. The instruction is implemented in the classroom and each student plants his/her own plant or terrarium. The Brooklyn Botanic Garden staff is on hand during the actual planting of the plants or terrariums. The students monitor their plants and are taught how to look for the importance of the sustainability, survivability, diversity and adaptability of each plant.

Each class provides a Community Horticulture Project at the end of the project. We viewed some very creative, informative and educational projects created by some of the classes.

Initially, the Project Green Reach purchased eight hydraulic lift tables, divided into two connecting rooms, from the monies associated with the Founders Fund winner. These large tables aid in accessibility to all ages and heights of students and adults.

This is a signature outreach program that the Brooklyn Botanic Garden created for the children of Brooklyn, on which many botanic gardens around the country model their programs in their communities. This is often the first exposure for many children to gardening, growing and enjoying the fruits of their labors. The success of this project has been measured by the keen interest in those children who've returned to mentor younger gardeners to discover the joy of gardening.

Submitted by Lindsey Clark,
Zone X Horticulture Representative

iPhoneography Fun! with Chris Wood

This breakout session was eight hours packed into one! Here are some of the highlights.

Composition is important no matter what the application. Use the grid on your iPhone and the rule of thirds. The goal is to have the viewers' eyes move through the photograph.

Keep pictures simple. Look at the scene and ask yourself, "what am I attracted to?" This helps select what you want to capture.

Pay attention to what is going on around the edges of the frame. Zooming in too closely may remove too many pixels. Cropping can be done later.

Be mindful of the settings and turn off HDR. Camera phones don't have depth of field capability.

If the subject is a flower, cut it and photograph it indoors with a white background.

iPhones have many built-in filters which can adjust the contrast, balance, color and saturation of an image. Learn where these filters are when accessing your phone.

Chris has her favorite applications. Snapseed is one. She also uses Stackable (layering); Brushstroke (editing); Waterlogue (for editing) and Camera+ for many options.

It was a great class and my pictures have improved almost overnight.

Submitted by Priscilla Growney
Zone XII Horticulture Representative

Compost Tea

While many fertilizers and soil amendments come and go, compost seems to remain a staple in today's gardening world. Compost tea, a water-based extract of compost, is a superb soil food, and is used extensively at the Brooklyn Botanic Garden with excellent results.

Jenny Blackwell, BBG's curator of the Discovery Garden and south garden plantings, worked for the New York City Composting Project before becoming a gardener. Her workshop on brewing compost tea at the Shirley Meneice Conference was outstanding and understandable!

Why use compost tea? It is the fastest way to get life into the soil, penetrates easily to plant roots, is easier to move and is relatively inexpensive to brew. If the tea is sprayed directly onto foliage it helps with bacterial and fungal infections as it increases beneficial organisms that replace disease-causing ones. If there is an issue of too much soil buildup in borders, spraying with compost tea rather than spreading a thicker layer of compost or mulch can ease soil buildup around crowns of plants. It is an excellent solution for fertilizing rooftop gardens or other areas where extra weight is a negative factor.

Compost tea, to be most effective, needs to be alive. In order to keep the tiny but powerful organisms that are in the dry compost--beneficial nematodes, bacteria, fungal spores and protozoa--alive, the liquid must be aerated to maintain an adequate oxygen supply.

Brewing the tea for a home garden can be as simple as using a 5-gallon plastic container, an aquarium pump, plastic tubing, a gang valve, 3 bubblers or air stones, a paint strainer bag, microbial food sources such as kelp/fish fertilizer, and worm castings.

All plants do not require the same compost tea recipe. While woody plants prefer a compost tea rich in fungi, herbaceous plants like grasses, annuals, vegetables and perennials prefer a more bacterial-rich tea. Chlorinated water should be aerated for 24 hours to remove chlorine before the brewing process begins. After all ingredients are assembled and the tea is ready to begin brewing, it ideally brews for 48-72 hours for a fungal brew and 36-48 hours for a bacterial brew. After the brew is complete, it can be diluted at a 1:3 ratio with non-chlorinated water for application.

How often should compost tea be sprayed? In a vegetable garden spraying in the spring and fall is recommended. Wait 3 weeks after spraying the compost tea to harvest vegetables. Once or twice a season on shrubs, trees, lawns and other areas should also be very effective. If, for instance, there is a problem with powdery mildew on a plant like Zinnias, you could spray before the infestation. Continuing to spray every couple of weeks can help control the mildew.

More benefits...compost tea helps with soil compaction as it moves life into the soil. Spray root balls of plants with tea before planting. Compost tea even has predatory nematodes that eat the root-feeding nematodes!

RESOURCES

www.nyc.gov/wasteless/compostproject
The above has a super tip sheet on compost tea including illustrations on making a compost tea brewer from a 5 gallon bucket: NYC compost project tip sheet

Compost Tea Brewing Manual by Elaine Ingram

Teaming With Microbes by Wayne Lewis and Jeff Lowenfels is an excellent resource for understanding the microscopic world of the soil web, its effect on all growing things, and how we can feed it!

Submitted By Sue Thompson
Zone VII Horticulture Representative

Where Art and Nature Meet: Designing with Native Plants

Darrel Morrison, Landscape Architect
Honorary GCA Member

Darrel's landscape design philosophy has been strongly influenced by a 1929 book, *American Plants for American Gardens*, by Edith Roberts and Elsa Rehmann. After reading this, he realized we should be working with native plant communities in our landscapes. Other major influences were *Luminosity,* a book by Byrd, and the work of Jens Jensen, noted Danish-American landscape architect.
These influences led Darrel to the idea that there should be a sense of place. He designed his gardens using drifts of plants with lots of curves, no straight lines. Pathways should move like rivers flowing through a landscape.
His many projects include gardens at NYU, Storm King, The Old Stone Mill at New York Botanic Garden and the BBG Native Flora Garden.

At NYU, Darrel created a native woodland garden, using plants that would have been there when Henry Hudson sailed by in 1609. He used hay-scented fern and other plants that could withstand the sun and heat on city streets in the summer.
At Storm King, there was too much lawn, so he planted swaths of partridge pea and switch grass, and used controlled burns to improve the fields.
At the Old Stone Mill, paper birch groves were planted in swaths on the steep slope, along with purple love grass, spiderwort, dwarf serviceberry, little blue stem, butterfly weed, cinnamon fern, royal fern, wood phlox and flowering dogwood.
In the Native Flora Garden at BBG, he created sweeping paths (not wiggly paths) and used

locally collected seeds, which were grown by a local nursery on Staten Island to create the gardens once found in the region. He believes that site conditions give you cues to in order to form your drifts.

Submitted by Marilyn Donahue,
GCA Horticulture Committee First Vice Chair

Libby Smith with Darrel Morrison

Modern Potager:
Organic Herbs, Vegetables and Fruit Trees Growing in BBG's Herb Garden

Submitted by Sharon Blackburn
Vice Chair Horticulture Committee, Partners for Plants

The Brooklyn Botanic Garden simply calls it The Herb Garden, but included are all the elements of a potager – herbs, vegetables, flowers, medicinal plants, dwarf and espaliered fruit trees, all meant for the kitchen. It is also a delight to the eye and a haven for bees and butterflies.

A potager can be front yard worthy by using a garden design aesthetic with vegetables planted in arcs or sweeps that combine, for example, the colorful leaves of Swiss chard with the striking shape of an artichoke or asparagus plant. A traditional herb knot garden can be updated by planting in any pattern with variegated box providing contrast. Arbors, as long as they do not shade the garden, provide visual interest and support for grapes and hops for the hobbyist wine maker or beer maker. Native flowers should be chosen to attract pollinators. Alyssum can be used as a colorful and fragrant ground cover. Many native flowers have medicinal uses, for example, echinacea, mullein, and marjoram.

If starting plants from seed, and using only a few seeds from a variety of seed packets, put the remaining seeds in cold storage, which may keep them viable for years, contrary to the expiration date on the package. There are exceptions and debate, so do a seed viability check before planting in following years.

The only fertilizer needed is fish fertilizer (Organic Neptune's Harvest) every month, or a homemade compost tea. Never use chemicals that might harm insects and the gardener. Read the instructions carefully on proper application. Replant with succession crops, and use a cover crop at end-of-season, perhaps winter rye to be turned into the soil in the spring.

And with your bounteous harvest when friends roll their eyes at one more squash, donate to a food pantry!

Eloise Payne Luquer
"Wildflowers of
Westchester County"
Watercolors and Gouache
Brooklyn Botanic Gardens Rare Book
Collection

Kathy Crosby, the head librarian at the Brooklyn Botanic Library, gave a retrospective on the life and works of Eloise Payne Luquer, (1862-1947).

Luquer was socially oriented and had a talent for history and archival reference. In order to establish a botanical registry she intended to "meet all the flowers of Westchester County" and record them by observation and documentation.

A prolific painter with a talent for capturing a subject, Eloise Luquer traveled by way of a horse and buggy over the entire county and its adjacent areas. Using water colors and gouache she painted over four hundred flowers. Luquer then took her paintings to schools, clubs and horticultural gatherings. Eventually traveling by car she was able to visit multiple states in the North and the South. It was her purpose to encourage women and children to develop an interest in botany and be aware that there were plants that needed to be protected.

The Garden Club of America established the Eloise Payne Luquer Medal for special achievement in the field of botany in her honor, and The Bedford Hills Garden Club of New York endowed the namesake medal in 1949.

Kathy Crosby, the head librarian, then introduced our group to an exceptional selection of rare books that are held by the library. She chose several volumes that reflected the multiple forms of print making that were used in the production of original botanical prints.

The Great Herbal, De Historia Stirpium published by Leonhart Fuchs in 1542, was printed using the process of wood engraving. A wood engraver uses a special tool called a "burin" to create "V" shaped incised lines. The incised lines provide for greater scientific detail and accuracy. In 1785 André Michaux used the printing process of "stipple engraving" on copper plates. The original copies of these prints did not contain color, but the manipulation of fine lines and black ink produced several intense shades of gray which produced depth and shadow in the print. The use of color in engraving was introduced in the mid-18th century. Watercolor washes were developed to enhance the engraved printed line. After the paint had dried, a solution of gum arabic was applied to give dimension and texture to the darker colors in the paint. The library's collection included several examples of stipple engravings that had been colored by hand.

Polygonatum biflorum

Sarracenia purpurea

The final presentation was a contemporary botanical print that reflects only the cultivar's blossom, stem and foliage without depicting the fruit and seed of the plant. The session was a wonderful event, and the Brooklyn Botanic Library is to be commended for their fine staff and beautiful collection.

Submitted by Anne Kinder
Zone VIII Horticulture Representative

Prospect Park

With the installation of Central Park nearing completion, Frederick Law Olmstead & André Vaux accepted a new commission, Prospect Park in Brooklyn. It was the mid 1860's and they were the notable, as well as the first landscape designer/architect's in the country. With waterways, woodlands and meadows as their focus, the diamond shaped 585 acre plot in the heart of Brooklyn, NY, was to become a haven for recreation. Carriage trails, a 60 acre pond for ice skating, a Boathouse, Carousel and Tea House were all included. Vaux designed the entry arch to commemorate Union Troops.

Slowly, due to lack of State funding in the 1970's, the once popular park fell into terrible disrepair. It was abandoned, unsafe and the public didn't dare venture into it. Fortunately the community gathered together in the late 1980's and garnered private financial support. The Prospect Park Alliance was formed with Tupper Thomas as the first hired administrator. A major fund raising effort raised $175M for a phenominal restoration of 7,000 feet of waterfront, 176 acres of woodlands and $1M restoration of the original carousel. Though the original designs are lost, photos and annual reports have provided historical detail for ongoing restoration projects.

Today, under the judicious eye of Susan Donahue, President and Park Administrator, and Christian Zimmerman, Vice President of Capital & Landscape Management, the park attracts a million visitors annually, along with migrating birds. Hundreds of volunteers assist with maintenance of baseball fields, a green roofed indoor/outdoor skating rink, a Splash Pat, miles of hiking trails and an Audubon Education Center, just to name a few features. Unlike

Central Park, no streets criss-cross this green oasis. Prospect Park is again a recreation destination for many.

Jocelyn Sherman
Zone II Horticulture Representative

Native Flora

In 1911, a year after the Brooklyn Botanic Garden was opened, the B B G created the first Native Flora Garden in this country. It was the inspiration of Norman Taylor. It was re-designed in 1931 by Henry Svenson, changing the old planting of like minded plants in flower beds to a naturalistic and more sustainable design. It was the 1st ecologically themed native plant garden of its kind in the United States, and it was planted with plants native to New York City and the Long Island area, found and collected within a 100 mile radius. Over the years, as it matured and the trees grew, much of the area was shaded to such an extent that the meadows could no longer be sustained due to the lack of sunlight. A wonderful woodland area had develpoed providing an environment for birds, animals and many pollinators. A delightful place for human visitors as well. With Ulrich Lorimer as the curator of the Native Flora Garden, Darrel Morrison was hired to design the two acre expansion of the Garden.. It opened in 2013, and the added coastal plain meadow and pine barren areas look as if they have always been there. Ulrich gave a delightful and informative talk on the expansion, and then led a tour of the new areas and Darel Morrison joined us. Their enthusiasm and knowledge made the whole experience meaningful and wonderful, as we walked through the lovely grasses and flowers with butterflies and insects all around us. A truly unique and historic garden in the midst of the city.

Submitted By Clare Stewart
Zone VI Horticulture Representative

Propagation from Cuttings

Patrick Austin, head propagator of the BBG, spoke to a very enthusiastic group during the Shirley Meneice Horticulture Conference. His lecture divided propagating into four sections:

WHY…Three reasons, first to retain certain plant characteristics, secondly to duplicate for sentimental reasons and finally to produce a fairly large number of plants quickly.

WHEN…Use a well-watered, healthy plant to take your cuttings which should be softwood, greenwood or semi-ripe. Sometimes this is hard to know. Patrick's suggestion to determine a stem's maturity is to take it in your hand and bend it. If the stem breaks with a characteristic snapping sound, it is in the softwood stage and ready to be harvested as a cutting. If, however, the stem is still too green, it will bend but not break. If the stem is entering the woody stage, it won't bend at all. Finding this perfect time will dramatically increase your success rate.

WHAT…He suggests a piece cut on an angle that is 3-6 inches long with a minimum of 2-3 nodes. He cuts back leaves, especially if they are large, and removes lower foliage, dips it in rooting hormone (this is optional) and places it 2-3" deep in container. Then using his fingers, presses soil around cutting to eliminate any air pockets.

WHERE… Patrick uses a well-draining medium that is half perlite and half vermiculite that has been dampened. He does not use sand, but he did agree that many propagators have great success using sand as their medium. He also says to consider pot size when propagating and to avoid pots that are too large. Place newly potted cutting in a sealed plastic bag creating a mini greenhouse. DON'T FORGET to label!!!

Final Thoughts:

The water in the dampened medium/soilless mix should be enough moisture for the cutting since it requires less than an adult plant. Open the sealed bag every ten days or so and let a little air in. If the soilless mix seems extremely dry, spray with a little moisture and reseal. Good Luck!

Submitted by Mary Miller
Zone III Horticulture Representative

National Parks

Pinnacles National Park,
San Benito and Monterey Counties, California

Located roughly 124 miles south of San Francisco in Central California, Pinnacles National Park rises from 824 feet to 3,304 feet in elevation. Spectacular spires and rock formations give Pinnacles its name and help make it one of the most phenomenal, awesome and striking places I have ever visited. Added to this are the beauty of the protected native plant communities, the robust ecosystems and the diversity of insects, birds and mammals.

Pinnacles NP shows the remains of a volcano that was formed when geological plates collided 22-23 million years ago. The San Andreas Fault split the volcano, and parts of the volcano slid astride the plates and moved 195 miles away from its original birthplace in the Los Angeles area. Frost, heat, water and wind have weathered and eroded the volcanic rocks. Earthquakes, fracturing and faulting have added further geological interest.[1]
Eighty percent of the flora consists of drought-tolerant chaparral, with signature shrubby plants like manzanita (*Arctostaphylos* spp.) and chamise (*Adenostoma fasciculatum).* There are also woodland communities that include oak savannas, and riparian communities with ferns, sedges and tules that are dependent on perennial water creek bottoms or spring seeps. Grasslands are perennial grasses such as purple needle grass (*Stipa pulchra*). Succulents like rock lettuce (*Dudleya cymosa* ssp. *paniculata*) and lanceleaf dudleya (*D. lanceolata*) root in rocky outcrops and slopes with broken rocks. Rare Plants exist here, too.

Gabilan Range at the Pinnacles National Park

The NPS boasts that Pinnacles has the largest number of native bee species (400) per unit of any place in the world--a fact that reflects the health of its natural communities. There are at least 536 native vascular plant species, providing food at different times of the year for birds, insects and mammals and attracting generalist and specialist pollinators.[2] 69 butterfly species and over 500 moth species (possibly as many as 1,000) are present. The Park serves as a release site for captive-bred condors, one of only three in the Unites States and the only location in the NPS system. The birds may be spotted riding the thermals or roosting on rock spires and even gray pines (*Pinus sabiniana*). The general bird inventory is long because Pinnacles' habitats provide food, water, shelter and nesting sites for many species. Colonies of bats overwinter and raise their young in caves formed by fallen boulders in steep, narrow canyons. Bear Gulch Cave has the biggest maternity colony of Townsend's Big-eared Bats from San Francisco to Mexico.

Dudleya lanceolata

Eriogonum nortonii

The health of an ecosystem often is revealed by amphibians, and Pinnacles has populations of California tiger Salamander and Red-legged Frog, both federally listed under the Endangered Species Act.

This dramatic, natural world with intact, functioning ecosystems is largely due to the fact that Pinnacles NP has been protected since 1908 when President Theodore Roosevelt made it a National Monument. In 2013 President Obama upgraded its status to a National Park under the Antiquities Act. In addition, about 80% of the Park, or 16,048 acres, was designated as wilderness by the 1964 Wilderness Act. This means that the land is managed for "wilderness values".[3]

"A wilderness, in contrast with those areas where man and his own works dominate the landscape is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain."

Plan a visit to Pinnacles, our 59th National Park to experience this wilderness. It is a perfect place for hiking, star gazing, photographing, botanizing, birding and inspiration.

By Diana Fish, Carmel-by-the-Sea GC, former editor of *The Real Dirt*

Footnotes:
(1)
https://www.nps.gov/pinn/learn/nature/geology.htm
https://www.nature.nps.gov/geology/parks/pinn/
(to take a geological tour: http://3dparks.wr.usgs.gov/pinn/html2/e1.html)

(2) www.wildflowersearch.com and google Pinnacles wildflowers.
(3) www.nps.gov/pinn/learn/management/wilderness.htm

Photo Credits:

Gabilan Range byNational Park Service Digital Image Archives
*Dudleya lanceolata (*Lanceleaf dudleya) by Lynn Watson @ 2002
Eriogonum nortonii (Pinnacles Buckwheat) by Keir Morse, http://calphotos.berkeley.edu

A Quick Trip To Four National Parks

A "quick trip"? You might ask - does that mean a quick, short article? Alas, nay, not so! In a whirlwind car trip, my husband and I recently visited four National Parks, coupled with amazing National Conservation areas, beginning in Utah and ending in Nevada. They draw visitors from around the world as illustrated by the myriad languages being spoken at each vista. The sheer number of visitors during the off-season is amazing – the spring wildflowers and summer months drawing a more significant number. You could spend years studying each of these sites. I will address a small aspect appropriate to this publication, in order of our visits. But first a few comments that will set the tone for this article.

Each of these National Parks is unique and yet there are commonalities. Each is geologically fascinating; each battles the effects of their weather, soils and wildlife; each is enriched with an array of vegetation and each wrestles with the effects that time, wind, and water have had on their ecosystems… but nothing has had more of an affect than man and invasive species.

A significant common ground is the management of invasive plant species. Since plants require water of varying levels, much of this is concentrated in riparian areas within each National Park – the interface area between land and a river or stream. Riparian-zone restoration is the ecological restoration of those habitats near streams, rivers, springs, lakes, floodplains – and a common effort in our National Parks. Invasive plants readily take over an area after a disturbance such as a fire, flood, or over-grazing. Eradicating invasive plants is often very difficult and labor-intensive, and methods are sometimes controversial, but often necessary to promote re-establishment of native plant communities.

Capitol Reef National Park We begin our travels in southwestern Utah at Capitol Reef National Park. The elevation at Capitol Reef, varies from less than 4,000 feet in the south, to over 11,000 feet in the north of this stretch of varied land formations, geologically referred to as the Waterpocket Fold, a nearly 100-mile long warp in the earth's crust. Capitol Reef's unique geologic formations, varying elevations and different soil types provide habitat for one of the largest numbers of threatened and endangered plant species in the national park system. According to the park web site, *'A total of 887 plant species occur in*

Vegetation is most visible from roadway in Capitol Reef.

the park, many of which have very restricted distributions, occurring on specific geologic formations, soils, slopes, or elevation or precipitation ranges. Capitol Reef National Park has more than 40k rare and endemic plant species, six of which are federally listed as threatened or endangered.'

Two of the more aggressive invasives in Capitol Reef are **Tamarisk (*Tamarix chinensis*) and Russian olive (*Elaeagnus angustifolia*).** Both were introduced in the US in the 1800s (by man) as ornamentals, in windbreaks, and the Tamarisk also for erosion control. By the mid-1900s Tamarisk was well on its way to replacing native riparian vegetation such as cottonwood trees and willows, and significantly reducing the biodiversity and the health of the region's riparian communities.

Why is Tamarisk considered relatively evil in Capitol Reef?

- Its extensive root system has adapted too well to the hot, arid climates and alkaline soils
- It consumes an excessive amount of scarce desert water and can evaporate/transpire up to 300 gallons per day, significantly more than the displaced natives
- Native species cannot thrive in the salty soil created by dropped and decaying tamarisk leaves
- Tamarisks spread quickly from its masses of seeds, creating dense thickets with as many as 3,000 plants per acre that can prevent the establishment of native vegetation

Native Cottonwoods left undisturbed by invasives create fall splendor.

Russian olive can grow to 40 feet. It is likewise unwelcome and has invaded Capitol Reef riparian areas and woodland edges. It too, competes and displaces natives, adversely affecting wildlife habitat, and actually altering stream flow. It has very strong, 2-4 inch thorns that can injure wildlife and people, as well as damage equipment. Birds like its fruit, but research shows that bird populations are higher in riparian areas dominated by native plants.

For these two invasives, the method most often used in Capitol Reef for control is to cut the plants close to the ground and carefully treat each stump with an herbicide. Often controversial, this has proven to be the only effective method and is a very carefully controlled process, using carefully selected herbicides and application methods with respect for native plants, wildlife and humans.

However, there is a biological method being researched and used for the Tamarisk. In the mid-2000s, the tamarisk leaf beetle (*Diorhabda elongate*) was introduced into riparian areas of Utah from its native China and Kazakhstan. Both adult and larva feed on Tamarisk until the plant is defoliated. The root system eventually shrinks and the trees usually die within three to four years. At this time, however, beetles cannot be legally released on federal land. Beetles released into neighboring non-federal lands have

found their way through river corridors and canyons and have been seen in various park locales. Dying Tamarisks indicate the beetles are hard at work.

Bryce Canyon National Park A short drive brings us to Bryce Canyon, named for the Mormon pioneer Ebenezer Bryce, who settled in a nearby canyon in 1875. When arriving in Bryce Canyon, one might ask, "What planet am I on?" The altitude of 8,000 to 9,000 feet above sea level, may contribute to that feeling along with the dramatic, orange and white, 200 feet high hoodoos that rise upwards, like stalagmites, forming forests of rock solid land formations.

Trees eek out an existence amongst Bryce hoodoos.

Huge strides were made in creating an environmental plan pertaining to invasive plants in 2005 with the Vegetation Management Plan Environmental Assessment. The 82-page document may be accessed at https://www.nps.gov/brca/learn/management/upload/VegetationManagementPlanEA0.The study resulted in a pest management plan, with the use of fire, mechanical, chemical and biological means as controls of invasive vegetation.

Non-native plants that exist throughout the park are concentrated along the road corridor and areas heavily occupied by park operations, visitors, or livestock. Common invasive species include whitetop (*Cardaria draba*), yellow salsify (*Tragopogon dubius*), yellow sweet-clover (*Melilotus officinalis*), black medic (*Medicago lupulina*), smooth brome (*Bromus inermis*), cheatgrass (*Bromus tectorum*) and several species of knapweed and thistle. It is interesting to note that Bryce reports that they have successfully controlled the two known non-native tree species in the region: Russian olive (*Elaeagnus angustifolia*) and Tamarisk (*Tamarix chinensis*). The park's streams are basically devoid of these species except periodic occurrence. Cattle grazing and livestock trespass into riparian areas could easily reintroduce them so monitoring continues.

Tourists pose the greatest problem to rare plants in the park, followed by erosion and trampling or munching along the open range cattle trails. Many of the rare plant populations are located close to hiking trails. Although the park posts a variety of reminders, for both visitor safety and vegetative health, to stay on the trail or signage such as "Give these Plants a Chance," I witnessed many visitors who were careless in their pursuit of a better view or a more spectacular photo.

Multi-steps for Invasive Plant Management were developed in 2008, using the NPS Exotic Plant Management system developed in 2000 as inspiration (mentioned here in brief):

1. Prevent new infestations by employing prevention and early detection techniques. The most effective, economical, and ecologically sound approach to managing invasive species with zero risk to resources of value is to prevent their invasion in the first place.

2. Educate visitors and staff about invasive plants and their management.

3. Inventory of invasive plants in Bryce Canyon National Park. Discovery of additional exotic plants will be documented and the checklist of vascular plants updated.

4. Monitor effectiveness of control efforts. Monitoring is the repeated collection and analysis of information to evaluate progress and effectiveness in meeting resource management objectives and is an essential part of an integrated invasive plant program. Without monitoring, there is no way of knowing whether control efforts are contributing to fulfillment of desired management objectives.

5. Track invasive plant management efforts. Information such as location, species, and treatment type will be recorded.

6. Prioritize both invasive plant species and locations to be controlled…because…it makes sense to focus management efforts on those species that could have the greatest impact. Species that are not likely to pose a large threat to resources may be treated with volunteer labor, when available.

7. Work with adjacent landowners, local, state and federal agencies, invasive plant cooperative networks, and others to develop and achieve common goals of invasive plant management.

8. Identify most appropriate control techniques. Control techniques will be selected that achieve maximum effectiveness in control while minimizing risks to humans and natural and cultural resources:

A. Mechanical techniques - mowing, cutting/sawing, digging, pulling, spudding (severing of roots below the root crown), discing/plowing, and smothering.

B. Prescribed burning - Fire is necessary to prompt germination of some plants, but it can also reduce the abundance of some species. The most successful uses of fire for invasive species control result from burns that try to mimic or restore historical (natural) fire regimes.

C. Chemical control - use of herbicides to kill or injure target plants, as well as chemicals applied along with herbicides that improve their efficacy (adjuvants).

D. Biological control - the deliberate introduction or manipulation of an invasive plant's natural enemies to suppress the invasive population - based on the hypothesis that the success of many non-native invasive plants is the result of their release from predators or pathogens found in their native range.

ZION NATIONAL PARK Another short drive brings us to Zion. Zion was originally established as Mukuntuweap National Monument by President William Taft on July 31, 1909. It was Utah's first National Park. Its majestic geologic history is worthy of individual study – quite easily researched on line. Driving in from the East entrance, one is literally in awe at the size and scope of its sandstone cliffs, often looming 2,000 feet high in Zion Canyon. Names given to many of the landmarks are testimony to early Mormon settlers: The Three Patriarchs, The Great White Throne, Angels Landing and Altar of Sacrifice.

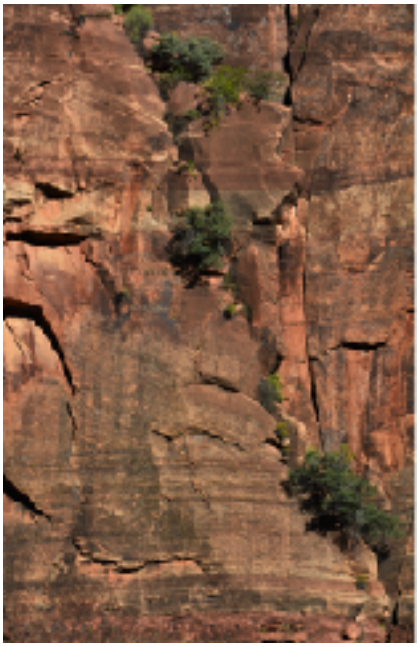
With elevations ranging from 3,600 to 8,700 feet, Zion National Park is also diverse, supporting more than 900 species of plants. The riparian area of the Virgin River supports enormous cottonwood trees,

herbaceous plants and grasses. Wetlands support cattails, willows, aquatic plants, and rushes. Water seeping out of the Navajo sandstone creates springs and the unique “hanging gardens” for which Zion is famous, full of ferns, wildflowers, and mosses.

As you move up in elevation, the pinyon-juniper forests abound, and ponderosa pines cling to cracks and ledges on the sandstone cliffs with their powerful roots. High plateaus host ponderosa pines, Douglas Fir, white pine and aspen.

Over one hundred non-native plant species occur in Zion National Park, a handful of which are a priority for control and eradication: Arizona cypress - *Cupressaceae glabra*; Tree of heaven - *Ailanthus altissima*; New Mexico locust - *Robinia neomexicana;* Black locust - Robinia pseudoacacia; Tamarisk or Saltcedar - *Tamarix pentandra*; Russian olive - Elaeagnus angustifolia; Puncture-vine - *Tribulus terrestris*; Ripgut brome - *Bromus diandrus;* Cheatgrass - *Bromus tectorum*; Bedstraw - *Galium* species C, Sp Su Madder - *Rubia tinctoria*. Cheatgrass and Ripgut brome (so named since it is known to lacerate the bellies of the cattle it was introduced to feed) are the grasses of particular concern as they have infested thousands of acres within the park.

Introduced into Zion in the late 1800s by early settlers farming and grazing livestock, Cheatgrass caused farmers to feel “cheated” out of their normal wheat crops. Cheatgrass is a highly flammable, invasive plant that fuels wildfires. A fire anywhere in the canyon represents a dangerous situation because there is only one way in and one way out. Grasses are most visible in the spring on the canyon bottom. They out-



Where there’s a will, there’s a way. Vegetation takes root from any available crack in the vertical sandstone cliffs of Zion.

Zion – the epitome of nature’s drama

compete the more fire-resistant, native vegetation by germinating in the fall or winter, and consuming soil moisture and nutrients early during the growing season - depriving the more desirable plants of both. When they set seed and die in late spring they create dry fuel that can ignite easily and rapidly. Native plants tend to grow in separate clumps and stay green later into the summer, with less fire potential.

Through the use of prescribed burns and herbicide treatments, management works to reduce fire danger and restore native grasses.

"Cheatgrass is a cool season plant. It emerges earlier than other grasses and eliminates diversity," said Kelly Fuhrmann, a fire ecologist with Zion National Park. "Following a fire, one of the main concerns is the ability of native plants to recover, and cheatgrass doesn't allow anything else to compete with it." Thus, killing the cheatgrass has been a top priority. If the herbicides are applied at the right time, said Fuhrmann, the grass-fire cycle that feeds cheatgrass can be slowed down enough for native plants to have a chance at making a comeback.

Using cattle to graze the area can help, although cattle will eat cheatgrass only when it is supple and green. Once it dries, goats may be used to reduce the amount of cheatgrass, but it still requires herbicides to really make a difference, Fuhrmann said.

DEATH VALLEY NATIONAL PARK Heading west on a several hour drive (a stop at a popular roadside coffee shop hovering on the side of a canyon overlooking the Virgin River yields fabulous sandwiches and fun local flavor with local musicians providing impromptu entertainment) across violently windy, flat open spaces, we encounter many other fascinating sites and finally arrive near Las Vegas at Red Rock Canyon Conservation Area. I mention it here as it is well worth a stop at this wonderful Visitors Center. Its educational exhibits will give the visitor a significant appreciation of the flora and fauna of Red Rock Canyon, as well as Death Valley.

Death Valley is the hottest, driest and lowest of all our national parks. When told that I would be visiting it, our grandchildren said it sounded scary and wondered if anyone was going to die there. In spite of its name, and its reputation as a wasteland, Death Valley National Park contains more than 1,000 plant species - from ancient bristlecone pines to spring wildflowers. The park covers over 3 million acres of Mojave and Great Basin desert terrain, with elevations from 282 feet below sea level to 11,049 feet. It is a fun aside to play golf on the lowest golf course in the world! Remember, 20 Mule Team Borax? This is where it all began – and ended. The saltpan is devoid of vegetation, and the rest of the valley floor and lower slopes have little vegetation, but as usual, where there is water, life persists.

And what do we find here? The dreaded Tamarisk (saltcedar)! The saltcedar tree is a source of intense frustration for environmentalists in Death Valley; it has robbed the native cottonwood and willow trees around springs and wreaked havoc on their ecosystems. The giant cane, or arundo, is also an undesirable intruder, crowding out native vegetation near rivers and springs. As in other national parks facing the same dilemmas, a system for invasive removal and re-establishing native species is in constant review.

In Death Valley, tamarisk was planted by pioneers, and even by the National Park Service during its early management of this park. As mentioned before, wherever tamarisk roots, it crowds out native plant and animal communities. It consumes excessive amounts of water and turns the soil unfavorably saline.

There are over 50 species of Tamarisk. Two types of tamarisk threaten Death Valley's wetlands; **saltcedar** (*Tamarix ramosissima*), deciduous shrubs, and **athel** (*Tamarix aphylla*), an evergreen tree species – both with evergreen-like scaly bark. The saltcedar has feathery pink flowers that produce huge quantities of small, fluffy seeds, easily finding their way into water sources and easily sprouted. The athel's seeds do not germinate and are not as invasive.

In 1972, the National Park Service began a tamarisk removal project at Saratoga Spring to return the area to a more natural condition. The ongoing habitat restoration project in Furnace Creek Wash (along Highway 190 east of the Furnace Creek Inn where we stayed) began in 1999. The National Park Service has removed a large stand of athels, as well as date and fan palms. While not as insidious as tamarisk, the non-native palms also have adverse effects on native populations.

Non-native burros, introduced by prospectors in the late 1800s, quickly adapted and proved destructive by overgrazing the scant plant supply – competing with the more desirable big horn sheep. As a result, the National Park Service embarked on a program to reduce burro populations, which are now under control

Natural hot springs at Furnace Creek supports vegetation in an otherwise sparse environment

As you can see, there are many differences and similarities in this small sampling of our National Parks. However, it is easy to see why the majesty and drama of each area was recognized as being worthy of our veneration and preservation.

And so we end our too-short of a trip at the Las Vegas airport, vowing to visit more of our National Parks in the near future. We are so fortunate that our forefathers recognized the significance of these areas. The U.S. National Park Service makes it their mission to protect, conserve, and preserve nationally significant resources. In 2000 the NPS created the *Exotic Plant Management Program* that supports teams working in over 225 park units. Its mission is similar to the *The Multi-Steps for Invasive Plant Management* developed in 2008, mentioned in the Bryce Canyon section. Exotic Plant Management Teams (EPMT), work with park management, volunteers, contractors, and service organizations to meet the Agency's mission: *the preservation of native habitats for the enjoyment of future generations*. "Leave No Trace" is a national program fostering responsible stewardship of America's public lands, including respect for flora, fauna and responsible use of our park system.

There is much criticism about the management, allocation of funds and people for the care of these significant natural resources. I cannot pretend to have in-depth knowledge of the whole picture in that regard. However, I look closer to home – my own yard, my own house, our local parks – such significantly smaller spaces, and realize that the job is never done and there is always something that needs attention and garners criticism. Each Visitor Center was testimony to the efforts and educational processes being applied in each area. Before traveling, I encourage anyone to visit the individual web sites and never drive by a Visitors Center without taking time to avail yourself of their knowledge. I cannot even imagine the herculean effort to stay on top of the needs of these significant parts of our ecosystem. Will our National Park system ever be without needs? Probably not. There is no doubt that we have learned a great deal about the long term impacts of our poor practices in the past and are trying to reduce them wherever possible. Humans have always been part of the problem and will forever be part of the solution. We plod on. We do what we can.

Article and photos submitted by,
Suzette de Turenne, Seattle Garden Club

Note: On November 8, 2016, a "Workshop for Riparian Restoration and the Tamarisk Beetle" was held in Las Vegas, Nevada. At the time of this writing, a report was not available. It will be interesting to learn what the future holds for the Tamarisk species as well as the beetle. For more information click www.tamariskcoalition.org .

Pine hanging on a precipice in Bryce – Visitors are asked to avoid stepping on exposed roots.

A sampling of interesting Bryce Canyon tree facts and lore:

Ponderosa Pine, *Pinus ponderosa,* survive at elevations from 3,000 to 9,000 feet – well-suited for Bryce, are the major species used for dendrochronology, or tree-ring dating and climate studies. Trees grow wide rings in wet year and narrow ring in dry years. In its "Conservation Message" the Bryce website says, '…Fires are essential for ponderosas because they help keep the more shade-tolerant tree species from invading Ponderosa Pine's preferred habitat. While small ponderosas may succumb to a hot fire, only the most horrendous crown-fires or firestorms will kill the bigger trees. Even if all the needles are burned off the tree, it will still survive.' Controlled fires mimic the positive effects that natural fires have on the forest.

Great Basin Bristlecone Pine, *Pinus longaeva,* are among the oldest living organisms on earth. These trees create fascinating photo ops because they often die in portions, exposing gnarled, bent branches trunks and roots. The oldest living Bristlecone is 4,765 years old (in California). Their needles, unlike other pines, stay on the limb for over 40 years. Bryce keeps secret the location of its oldest Bristlecones in hopes of protecting them from the public.

Limber Pine, *Pinus flexilis,* grow on dry rocky slopes and cliff tops where other trees cannot grow. They make it possible for other trees to grow near them by eventually stabilizing enough soil with their root system. Limber Pine boughs can be tied in knots, but visitors often damage the trees while trying

this and are asked act responsibly and untie any knots before leaving. Exposed roots are often damaged by foot traffic, weakening and eventually killing the trees.

Colorado Pinyon, *Pinus edulis*, grow in dry open land at 5,000 -8,000 feet. Very slow growing with a tap root that can reach 40 or more feet into the soil in its search for water. Their pitch-covered cones house the popular "pine nut". A pound of pine nuts is approximately 3,000 calories (a single nut as much as 20 calories) – much more than a pound of hamburger. Pinyons are dependent on Pinyon Jays and Clark's Nutcrackers, two species of bird who collect and transport up to 30,000 pine nuts each year in order to survive harsh winters. "Do not feed the wildlife" has special meaning here as birds who are hand fed by visitors do not learn to hunt for themselves or teach their offspring, thus contributing to starvation when the visitors depart.

Douglas-fir, *Pseudotsuga menziesii,* will survive in moist, well drained rocky soils or in shady drier areas. They self-prune so that the lower part of the trunk is usually devoid of branches. Pioneers boiled its needles as a substitute for coffee. Fast growing, it is sought after by the timber industry, cut, replanted and then too often recut before the replanted forests can sustain the species the virgin forests once housed.

Quaking Aspen, *Populus tremuloides*, prefer moist soil but grow in desert environments that receive less than 7 inches of annual rainfall as long as there is plenty of sunlight. Often confused with birch trees, Aspens' bark does not peel. They are very unique. A singular stand of Aspens all come from the same root system. Their growth is unlike any other kind of tree. A singular mass of roots sprouts several trunks – this is called asexual or vegetative reproduction. These root clones can live to be thousands of years old. Aspens from the same root system all turn the same color at the same time, creating interesting, distinguishing patterns of color on hillsides during the fall. Also unique is the fact that it synthesizes sugars all winter and does not go into dormancy like other deciduous trees. The only chemical or creature known to be able to destroy Aspen roots faster than they can grow, is an abundance of pocket gophers.

Sparse vistas belie the wealth of life in Death Valley

Articles

Boxwood Blight

Calonectria pseudonaviculata syn. *Cylindrocladium buxicola*

by Sue Thompson, Zone VII Horticulture Representative

Introduction

Boxwood have been an incredibly important aspect of American landscapes for centuries. Their iconic presence is nearly unrivaled by any other shrub in many states. Today Boxwood are being confronted with their most serious disease challenge. The disease, Boxwood Blight, is extremely contagious and has already decimated Boxwood at least at one historic site in Virginia. The gravity of this situation has resulted in extensive research both at universities and with growers. Currently, no cure has been found for this disease. The following information can be supplemented by going to Boxwood Blight Best Management Practices:
http://www.anr.ext.vt.edu/nursery/boxwood~blight/index.html

General Description

Boxwood Blight, *Cylindrocladium buxicola* or *Calonectria pseudonaviculata*, is a fungal disease introduced into the United States in 2011. First recognized in The United Kingdom in the mid-1990's, it has also spread to many European countries.

Symptoms

Symptoms of Boxwood Blight include brown leaf spots that lead to eventual defoliation. Additionally, there is black streaking evident on the stems. Initially, the leaf spotting can resemble another disease, Volutella Blight. Boxwood Blight can be partially controlled by very strong fungicides, but the disease will only be controlled and not eradicated.

Means of Spreading

Wet, warm conditions provide the ideal environment for the spread of Boxwood Blight, and the disease has multiple means of spreading. According to Virginia Tech publications, "the major means of spread of this disease is by movement of contaminated plant material (e.g. container or field grown boxwood, boxwood greenery used for holiday decoration). ADDITIONALLY, the disease is spread through sticky, water-born spores and Microsclerotium. The spores adhere easily to clothing, equipment, or anything that has come into contact with infected plants. Microscleratium are compact masses of mycelium (the vegetative part of a fungus) stored with reserve food material that becomes detached and remains dormant until a favorable growth opportunity occurs. Microsclerotium can remain dormant in dead leaf debris for up to TEN years.

Susceptibility of Cultivars

Buxus sempervirens 'Suffruticosa' is the most susceptible to *Cylindrocladium buxicola*. Additional highly susceptible cultivars include *Buxus sinica var. insularis* 'Justin Brouwers', *Buxus sempervirens* 'Elegantissima', *Buxus sempervirens* 'American', *Buxus sempervirens*. 'Jensen', *Buxus microphylla var. japonica* 'Morris Midget and 'Morris Dwarf'. Less susceptible cultivars include *Buxus microphylla var. japonica* 'Green Beauty', *Buxus sinica var. insularis* 'Nana' and *Buxus sempervirens* 'Dee Runk'. A complete list can be found on the NC State University website.

Other Carriers

Pachysandra terminalis, *Pachysandra procumbens* and *Sarcococca* spp. are host plants not effected by the disease but carrying the pathogen. Additionally, while non susceptible Boxwood cultivars remain healthy, they can also harbor the pathogen and spread it to susceptible cultivars on the property.

Now What?

With all of the grim news, what should we as gardeners do? **Again, please refer to the above link for professional information**. At the least, and immediately, examine the Boxwood on your property. If you see evidence that might indicate Boxwood Blight, contact your local Extension Agent.

Next, if you are planning to purchase Boxwood, ask nursery personnel if their Boxwood are from producers participating in the Boxwood Blight Cleanliness Program. In Virginia, these growers are adhering to strict standards of cleanliness and are inspected by the Virginia Department of Agriculture and Consumer Services.

Keep all of your tools CLEAN. Refer to the Virginia Tech website for cleaning and sterilizing solutions. Lysol works but should be applied according to directions.

If you have outside maintenance crews coming in, insist that they sterilize not only all of their tools but their vehicles and clothing before coming onto your property. It is an extreme move; however, any debris from another property on which the Blight is found can be carried onto your property even on soles of work boots. Having sterilizing materials on site is a good way to ensure that your maintenance crew adheres to your wishes.

As you begin to consider Christmas decorations or are thinking of a Christmas sale, be extremely careful about sourcing your Boxwood cuttings. A lovely wreath may house negative consequences for living shrubs in the landscape.

Planting Boxwood

For the foreseeable future, think very carefully before purchasing new Boxwood for your landscape. If it is the only suitable plant for your situation, please purchase your plants from the most reliable sources and be sure to ask the question mentioned earlier. If possible, consider alternative plants. There really are so very many superb evergreen shrubs!

Good News??

Yes, there is. Very dedicated nurserymen and scientists are relentlessly dedicated to controlling and eventually finding a cure for Boxwood Blight. Our job now is to stay educated and to share correct and up-to-date information.

Heirloom Plants

Most people understand heirloom to mean family hand-me-downs: grandma's lovely old opal ring or grandpa's Remington hunting rifle as family heirlooms. Heirloom is a compound word: "heir" is defined as a person inheriting and continuing the legacy of a predecessor: while "loom", formerly meaning tool, has morphed into thing of use. There are plants and animals that are considered heirlooms because their desirable characteristics are maintained thru propagation. Nancy O'Donnell, speaking of plants, wrote in San Francisco Chronicle "…Typically, heirlooms have adapted over time to the climate and soil they have been grown in. Due to their genetics, they are often resistant to local pests, diseases, and extremes of weather." These plants, besides being beautiful in form and color, offer gardeners the extra advantage of easier maintenance.

Heirlooms are plants that tell stories: how people made them into food, medicine, paper, rope, ink, perfume. Plants have stories of their discovery around the world, their trips with explorers on ships and beasts of burden. Plant explorers of the 17th and 18th centuries produced the rampant diversity around the world during the 19th and early 20th centuries.

Before the development of agribusiness and the "green industry", a greater variety of plants were grown for human use. Heirloom varieties are open-pollinated: their collected seeds reproduce plants with most of the genetic traits of the parent plant: taste, shape, color and often with a distinctive flavor richer and multi-faceted compared to the produce of contemporary agriculture. On the everyday level cultivars were nurtured and shared by family and neighbors for many generations producing true heirlooms. Roses, for example, were gathered from neighbors, old home gardens and cemeteries. The small cuttings were nurtured in old soil augmented with manure growing within the protection of glass jars or bells.

Heirloom plants have a history. They have been cultivated for centuries; called cultivars by Liberty Hyde Bailey; a new word in horticulture that he created by combining cultivation and variety. Most of today's ornamental plants have been from wild plants that have been cultivated (breeding for color and form) thru the centuries: think tulips, daffodils, roses, rhododendrons, hydrangeas and azaleas. We are speaking primarily of ornamental plants. The similar process is ongoing in agricultural crops, our fruits and vegetables, as well as trees grown for decorative purposes and lumber production. For the home gardener heirloom vegetables are old traditional, open-pollinated cultivars which have a reputation for being high quality and easy to grow.

Some horticulturalists or botanists use a plant's length of cultivation of over 50 to 100 years to determine its heirloom status. Whereas, in the agricultural and green industry the date of 1945 is used to qualify as an heirloom plant. By the time of the Second World War, the need for food particularly and landscape plants for new GI homes demanded increased production. Hybrid fruits and vegetables were developed principally to enable large-scale commercial production. The point was to make agriculture more profitable and less laborious. The characteristics that were important for "modern" plants included: disease resistance, large production quantities, uniform size and shape, and the ability to be easily transported. Does anyone remember the tomato that was bred to withstand a 13 mph collision?

The end of World War II marks, roughly, the beginning of widespread hybridizing (a hybrid, generally speaking, is the offspring resulting from the breeding of two genetically distinct individuals) used by

growers and seed companies. 1951 marked the widespread introduction of the first hybrid varieties. In the 1970's hybrid seeds began to proliferate in the commercial seed trade proclaiming the "superiority" of the new plants. Meanwhile the real heirlooms became more and more difficult to obtain.

As an example, the "need" for flowering trees in home landscapes that would provide beautiful blooms, fall color and little or no fruit produced the Bradford pear and others. These fruitless trees were hybridized from the Callery pear, a fruitless Chinese ornamental tree used as root stock for other varieties of pear tree. What has occurred is that birds, being birds, have cross pollinated these new decorative trees creating naturalized populations of competing trees to the native trees, becoming, potentially a new invasive. Further, Bradford pear, proclaimed in the market place due to its high resistance to fireblight, does not have a strong branch structure, so where wind and strong rain are problems, there is a preponderance of fallen or damaged trees. Choose instead Cleveland Select if you must have a fruitless pear tree.

Another problem created by this rush to hybridizing is the growing unavailability of the old, tried and true varieties of trees. Thirty years ago at Hale Farm and Village (a preservation of an 1800's home farmstead and a replication of a Western Reserve Village created with preserved homes, church and offices) we were able to easily locate espaliered heirloom pear trees for the replicated Goldsmith Garden there. During the current restoration of this garden the simple historic Barlett pear, trained as espalier, was found after several month's search on the West Coast. Our nearby Great Lakes growers have forsaken it for the fruitless trees! One wonders whatever is poor Partridge to do for the Holidays?

There is a movement among those who believe it necessary to grow heirlooms in order to preserve diversity in food crops. They believe it is important not to loose valuable genetic variation in the future. Some gardeners just like the variety and taste of the heirlooms. These folks produce catalogues, blogs, websites, farmers' markets, flower farms and seed libraries. One library in Pennsylvania allowed gardeners to "check out" a package of open-pollinated seed, and "return" seeds kept from the crop grown from those seeds. The Department of Agriculture thought perhaps this activity raised the possibility of "agri-terrorism". They cited the Seed Act of 2004 which required the library staff to test each seed packet for germination rate and whether the seed was true to type. In 2016 the Department of Agriculture reversed this decision, and clarified that seed libraries and non-commercial seed exchanges are not subject to the requirements of the Seed Act. It turns out that seed libraries and non-commercial seed exchanges are not subject to the requirements of the Seed Act.
Last and by no means least, heirloom plants grown in their own environments possess values beyond human needs: they also feed birds and insects maintaining abundant biodiversity.

Submitted by,
Kathie VanDevere of the Akron Garden Club, former Editor of *The Real Dirt*

Book Review

Bulb Forcing
for beginners and the seriously smitten
By Art Wolk

Although we are just entering bulb planting season in many parts of the country, it is not too soon to think about bulb forcing to get a head start on spring and more importantly to have the perfect entry for flower shows and horticultural competitions. Art Wolk has methodically brought us through the entire process of choosing, purchasing, propagating and prepping your entry for the competition.

I now know why I was never successful in horticultural competitions, sometimes not even being able to get my plant "passed". It is no wonder. I now possess all of the "tricks of the trade". Art Wolk has won more ribbons at the prestigious Philadelphia Flower Show, mostly blue, than one can imagine. He has suggestions on how to encourage your entry to move along and also how to slow them down in order to make the target date. He shows how to clean and polish your entry terracotta pot. That bit of information is worth the price of the book. His very humorous style of writing, sharing his own mistakes, made my misadventures less frustrating.

There are many, many types of bulbs that can be forced using a variety of methods. I especially enjoyed his chapter on forcing bulbs hydoponically. There are great photos of the various vessels that are used in this method. Needless to say, there are simple little hints that will help one to have complete success. I never focused on keeping the bulb itself above the water so that the roots have to grow through the air to get water. Roots need air. Just one example of the pearls of wisdom shared in this book.

I should also mention the excellent photography found throughout the book. Mr Wolk has methodically photographed as well as written in detail the methods used to force, plant, and groom these magical plants. Again I must use the term, "outstanding reference book" when faced with a bulb forcing horticultural challenge. I will certainly keep a copy on my horticulture book shelf.

Gail Hamsher
Library Committee
New London Garden Club Zone II